

Midterm Assignment

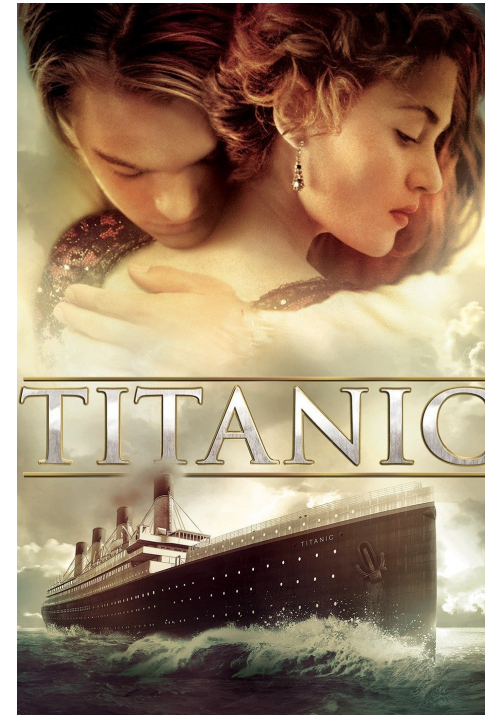
Kaggle Prediction Competition

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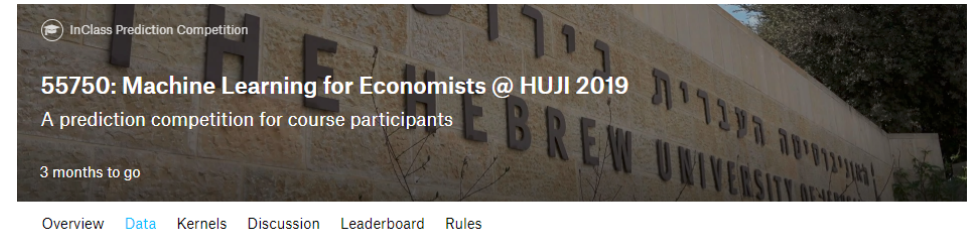
Kaggle: A Global Hub for Data Science Competitions

- **Kaggle** is a *vibrant data science community* where machine learning practitioners worldwide compete.
- Public companies and private users alike upload the datasets used in Kaggle competitions.
- A "kaggler" clinches victory by developing the most *accurate* algorithm for a specific dataset.
- Kaggle competitions serve as *platforms* for practicing ML skills and keeping abreast of state-of-the-art ML methods.



Getting Started with Kaggle

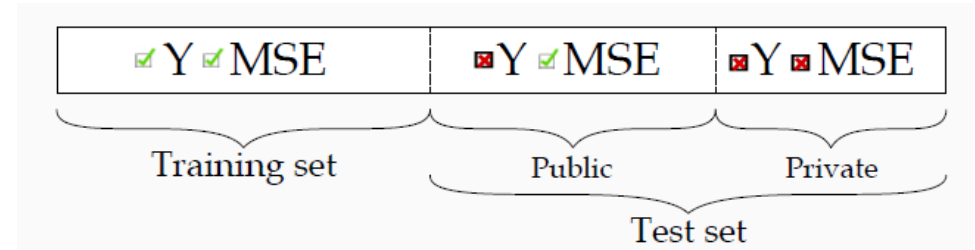
1. **Step One:** Visit www.kaggle.com and sign-up.
2. **Step Two:** Navigate to the ml4econ course competition (link on Moodle)
3. **Step Three:** Thoroughly review the competition details including objectives, deadlines, data, evaluation criteria, submission rules, and so on.



Understanding the Kaggle Competition Data Structure

- *Immediate Feedback*: The Mean Squared Error (MSE) for the public test set (30%) is available immediately upon submission.
- *Delayed Feedback*: The MSE for the private test set (70%) is disclosed only after the competition closes.
- *Unpredictable Split*: The division between the public and private test sets is arbitrary and undisclosed to competitors in advance.

Remember, your *final ranking* hinges on your performance on the *private* test set.

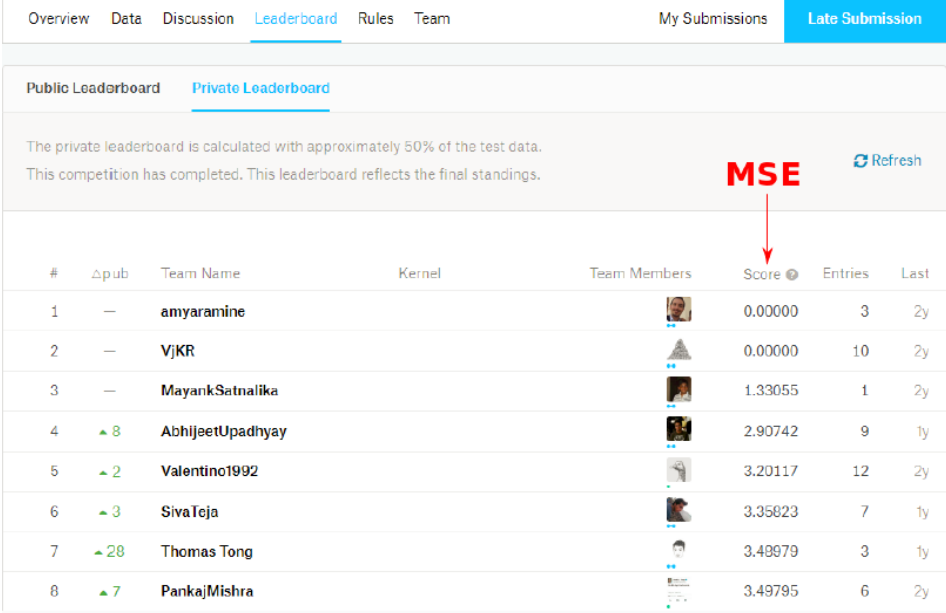


Mastering the Basic Kaggle Competition Workflow

1. **Acquire Domain Knowledge:** Build understanding around the problem domain.
 2. **Explore the Data:** Perform an initial data analysis.
 3. **Preprocessing:** Employ techniques such as standardization, creating dummy variables, determining interactions, etc.
 4. **Choose a Model Class:** Decide on a model class, like Lasso, Ridge, Trees, and so forth.
 5. **Tune Complexity:** Use cross-validation for optimizing model parameters.
 6. **Submit Your Prediction:** Forward your model's prediction for evaluation.
 7. **Document Your Workflow:** Keep a well-structured record of your process using *R Markdown*.
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Monitoring Your Performance

- Leverage the public leaderboard to *track your performance*.
- Your interim ranking (reflected in the "scores" column) is determined by your MSE on the public test set.
- After the competition closes, the final ranking will hinge on the MSE on the private test set.
- While you may submit multiple predictions, exercise caution to avoid overfitting the public test set!



The screenshot shows a competition interface with tabs for Overview, Data, Discussion, Leaderboard (selected), Rules, and Team. On the right, there are links for My Submissions and a Late Submission button. Below the tabs, there are sections for Public Leaderboard and Private Leaderboard. A note states: "The private leaderboard is calculated with approximately 50% of the test data. This competition has completed. This leaderboard reflects the final standings." A red arrow points to the "Score" column header, which is labeled "MSE". A "Refresh" button is also visible. The table below lists the top teams with their rankings, public score changes, names, kernels, team members, scores, entries, and last update times.

#	Δ pub	Team Name	Kernel	Team Members	Score	Entries	Last
1	—	amyaramine			0.00000	3	2y
2	—	VJKR			0.00000	10	2y
3	—	MayankSatnalika			1.33055	1	2y
4	▲ 8	AbhijeetUpadhyay			2.90742	9	1y
5	▲ 2	Valentino1992			3.20117	12	2y
6	▲ 3	SivaTeja			3.35823	7	1y
7	▲ 28	Thomas Tong			3.48979	3	1y
8	▲ 7	PankajMishra			3.49795	6	2y

Kickstarting Your Kaggle Journey

Executing this code chunk will automatically download the essential data for our Kaggle competition. This includes train data, test data, and a sample submission file.

```
library(tidyverse)

train <- read.csv("https://raw.githubusercontent.com/ml4econ/lecture-notes-2023/master/a-1")
test <- read.csv("https://raw.githubusercontent.com/ml4econ/lecture-notes-2023/master/a-1")
sample_submission <- read.csv("https://raw.githubusercontent.com/ml4econ/lecture-notes-2023/master/a-1")
```

NOTE: By default, a new project will be created on your desktop.

```
slides %>% end()
```

 [Source code](#)